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TITLE: Radiation, Scattering, and Guidance of Electromagnetic Fields by Arbitrarily Shaped Structures Embedded in Layered Dielectric Media

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QUARTERLY PROGRESS REPORT

(April 1, 1991 — June 30, 1991)

We have undertaken a study of a waveguide-excited microstrip patch antenna. Unlike some previous treatments of this problem, the technique we have developed allows for an arbitrarily shaped patch and/or for an arbitrarily shaped aperture. We use the image theory to cast the excitation problem as a periodic one, which allows the structure below and above the ground plane to be treated in a uniform fashion. We have also begun a study of three-dimensional microstrip discontinuities, like vias connecting two microstrip lines or air bridges connecting the outer conductors of a coplanar waveguide.

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